



AAR-100

Human Factors Newsletter # 02-01

December 29, 2001 – January 18, 2002

NEXCOM Latency Study: Human factors researchers at the William J. Hughes Technical Center (ACT-530) met with the NEXCOM Human Factors Working Group on January 3 to discuss plans for a simulation study. Voice throughput delay has been identified as a critical issue for the suitability and acceptability of the Very High Frequency Digital Link Mode 3 (VDL3) system, which will replace aging analog equipment. The study, which is scheduled for March, will examine alternative delay parameters in a high-fidelity controller-in-the-loop simulation. The results of the study will be used to establish NEXCOM VDL3 delay performance requirements. (R.Sollenberger, WJHTC).

Surface Safety Framework Study: As a result of a recent study by Raja Parasuraman (Catholic University of America), John Hansman (Massachusetts Institute of Technology), and Steven Bussolari (Massachusetts Institute of Technology), a “White Paper” has been distributed outlining a framework for the evaluation of human-system issues in the development and use of new technologies such as ASDE-X. The general approach is applicable to a wider range of surface safety solutions. The framework describes the best available methodologies associated with the assessment of the following major human-system elements: (1) detection system performance; (2) total system performance; and (3) controller performance, focusing on situation awareness and workload. The methodologies discussed include Signal Detection Theory (SDT) and Receiver Operating Characteristic (ROC) analysis, Bayesian statistics, fuzzy SDT, System Operating Characteristic (SOC) analysis, Monte Carlo simulation, fast-time simulation with probability density function representation of human and system response times, computational cognitive modeling, and modeling of human mental workload and situation awareness. This approach provides the means to determine the incremental value to safety of the implementation of different components of proposed systems, as well as to the continuing evaluation of safety once systems are fielded. (G. Hewitt, AAR-100)

Office of Aviation Medicine Changes Name: The most recent Medical Bulletin published by the Office of the Federal Air Surgeon noted that the Administrator approved changing the name of the Office of Aviation Medicine to the Office of Aerospace Medicine to reflect the agency's "medical responsibilities associated with the commercial space transportation program." Likewise, the name of the FAA's Civil Aeromedical Institute (CAMI) in Oklahoma City has been changed to the Civil Aerospace Medical Institute, for the same reason. The Aviation Weather office, formally ARW, changed its name to Aerospace Weather, now ARS. By the

way, the Federal Air Surgeon's Medical Bulletin, which is published quarterly at CAMI, always has something of interest. You may want to check it out at <http://www.cami.jccbi.gov/AAM-400a/fasmb.html> (G. Lavey, AOA-5)

Oceanic Air Traffic Control Operations: AAR-100 staff and Dr. John Hansman (Massachusetts Institute of Technology) met in Reykjavik, Iceland to review and define opportunities for collaborative human factors research on the integration of advanced technologies, specifically ADS-B, in oceanic air traffic control operations. Discussions were held with Dr. Thorgerir Pálsson (Director General, Iceland CAA), Asgeir Pálsson (Director, Air Traffic Management, ICAA) and others at the ICAA; Dr. Anna Soffia Hauksdóttir and Dr. Ebba Hvannberg (University of Iceland); and Brynjar Arnarson (Tern Systems). It was agreed that research methods will be harmonized as appropriate to provide increased understanding of mutual human factors issues such as related to communication and situation awareness. AAR-100 staff also toured the recently completed area control center and discussed design and testing of the new Flight Data Processing System that replaces paper strips with electronic flight data for domestic radar and oceanic non-radar operations. (P. Krois, AAR-100)

Aeronautical Decision-Making: As part of the *Safer Skies* initiative, Dr. Shappell (CAMI AAM-510) recently participated in the monthly meeting of the Aeronautical Decision Making JSAT in Washington, DC. In December, efforts were aimed at identifying representative general aviation accident cases from the HFACS analysis conducted by CAMI and the University of Illinois (Dr. Wiegmann). A subset of cases was identified for review by the panel of decision-making experts organized by Dr. David Hunter (AAM-240) and scheduled to meet in January 2002. Results of the expert panel analyses will be briefed at the February 1, 2002 meeting of the ADM JSAT. (S. Shappell, CAMI)

General Aviation Accident Analysis: Dr. Shappell (CAMI AAM-510) and Dr. Wiegmann (University of Illinois) presented their analyses of all General Aviation accidents occurring between 1990-98 to the NTSB (Drs. V. Ellingstad, D. Bruce, and E. Byrne) and ASY on separate days. The intention was to brief each organization on the progress thus far and begin discussions on hosting the HFACS data on either the NTSB or NASDAC web sites. A discussion regarding research collaboration between the NTSB (Safety Studies Division) and FAA (CAMI) also took place. (S. Shappell, CAMI)

En Route Communications Gateway Program: A human factors researcher from the William J. Hughes Technical Center's NAS Human Factors Branch (ACT-530) attended a planning meeting for two Operational Capability Demonstrations (OCDs) of the En Route Communications Gateway (ECG) Program. During the OCDs, participants from the field will walk through structured procedures using the ECG hardware and software. Human factors researchers will observe their interactions and administer usability questionnaires. The OCDs will take place late in 2002. (T. Yuditsky, WJHTC)

Formal FAA-iCMM Appraisal Performed for Level 2 Capability in AAR-500 Programs: A formal FAA-iCMM appraisal was conducted for Level 2 capability in AAR-500 programs from October 29th through November 2nd. The Airport Security Technology Integration (ASTI) and Human Factors (HF) Programs, part of Aviation Security

Systems Integration Branch (AAR-510), were appraised in nine process areas. The FAA-iCMM Appraisal Method team consisted of six trained appraisers from AAR, AIO, AOS, and ACT. The appraisers conducted interviews with management and practitioners, asking questions related to the nine process areas, and examined documents that supported the processes and procedures used in those areas. A final findings briefing given on November 2nd resulted in the ASTI and HF Programs receiving a full Capability Level 2 in six of the nine process areas: Project Management, Contract Management, Needs, Requirements, Outsourcing and System Test and Evaluation, and Implementation. ASTI and HF are the first AAR programs to reach Capability Level 2 in any process areas under the FAA-iCMM process improvement initiative. (D. Wilson, AAR-510)

More information on human factors research can be found at the FAA Human Factors (AAR-100) web site: <http://www.hf.faa.gov>

Mark D. Rodgers
FAA (AAR-100)



February 14-16, 2002 - Helicopter Association International Heli-Expo, Orange County Convention Center, Orlando, FL <http://www.heliexpo.com/preliminary.htm>

February 26-March 3, 2002 – Air Freight Expo 2002, Shangri-La Hotel, Singapore <http://www.eyefortransport.com/asia2001>

March 2002 – European Transportation Leaders Conference, Landmark Hotel, London <http://www.aviationnow.com/conferences>

March 7-8, 2002 – Potomac Chapter Human Factors and Ergonomics Society Mid-Year Symposium, Ft. Belvoir Officer's Club, Virginia <mailto:jerrykrueg@aol.com>

March 10-12, 2002 – 2002 Air Freight Management Conference & Exposition, The Westin Diplomat Resort Country Club and Spa, Hollywood, FL <http://www.aemca.org/>

March 11-15, 2002 – Global Cargo Week & Dangerous Goods by Air Conference & Exhibition, Sofitel Forum Rive Gauche, Paris, France <http://www.iataonline.com/>

April 9-11, 2002 – Maintenance, Repair and Overhaul Conference & Exhibition, Phoenix Convention Center, Phoenix, AZ <http://www.aviationnow.com/conferences>

May 5-9, 2002 – 73rd Annual Scientific Meeting of the Aerospace Medical Association, Queen Elizabeth's Hotel, Montreal, Canada <http://www.asma.org/>

May 6-12, 2002 – International Aerospace Exhibition and Conference, Berlin Brandenburg International Airport, Berlin, Germany <http://www.ila-berlin.com/>

May 20-22, 2002 – 11th Annual Phoenix International Aviation Symposium, The Phoenician Resort, Phoenix, AZ <http://www.phxskyharbor.com/>

August 27-30, 2002 – Measuring Behavior 2002, 4th International Conference on Methods and Techniques in Behavioral Research, University of Amsterdam, Amsterdam, The Netherlands <http://www.noldus.com/events/mb2002/index.html>

September 17-20, 2002 – International Air Cargo Forum, Hong Kong <http://tiaca.org/>

September 23-27, 2002 – Human Factors and Ergonomics Society 46th Annual Meeting, Pittsburgh Hilton and Towers, Pittsburgh, PA <http://www.hfes.org/>

October 27-31, 2002 – 21st Digital Avionics Systems Conference, Hyatt Regency Hotel, Irvine, CA <http://www.dasconline.org/>

April 7-27, 2003 – Aviation World's Fair, Newport News/Williamsburg, VA <http://www.worlds-fair.com/>

May 4-9, 2003 – 74th Annual Scientific Meeting of the Aerospace Medical Association, Convention Center, San Antonio, TX <http://www.asma.org/>

October 13-17, 2003 – Human Factors and Ergonomics Society 47th Annual Meeting, Adams Mark Denver Hotel, Denver, CO <http://www.hfes.org/>

May 2-7, 2004 – 75th Annual Scientific Meeting of the Aerospace Medical Association, Egan Convention Center, Anchorage, AK <http://www.asma.org/>

September 20-24, 2004 – Human Factors and Ergonomics Society 48th Annual Meeting, Sheraton New Orleans Hotel, New Orleans, LA <http://www.hfes.org/>

Note: Calendar events in Italics are new since the last Newsletter



Comments or questions regarding this newsletter?
Please contact Bill Berger at (334) 271-2928
or via e-mail at bill.ctr.berger@faa.gov

